NEW KNOWLEDGE OF OUR PLANT INDUSTRIES

A radio talk by Wm. A. Taylor, Chief, Bureau of Plant Industry, delivered through WRC and 39 other radio stations associated with the National Broadcasting Company, December 10, 1930.

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The Bureau of Plant Industry is a research organization in the United States Department of Agriculture which is devoting approximately $5,000,000 annually to the investigation and improvement of plant production and to the discovery of important facts for plant industries of various kinds. The record of the past year has been of unusual significance. More than ever before it is apparent that further improvement or even the continued maintenance of profitable crop production calls for extensive research of the most thorough character. In the production of staple crops and to some extent in other phases of agricultural production, the American farmer is in fairly direct competition with other agricultural regions throughout the world. Under these circumstances it becomes of the utmost importance that greater efficiency in crop production in this country be steadily developed. Improved cultural practices, the utilization of labor-saving machinery wherever practicable, and, above all, the utilization of the varieties most likely to produce a satisfactory crop in the particular locality under consideration are as essential for the national well-being as for the immediate success of the individual farmer.

"Improved efficiency is desirable not merely for the purpose of increasing production on a given area, but also for the purpose of increasing the producer's profit by reducing the pest and adverse weather hazards and thereby lowering the average unit cost of production. Improved cultural practices must be developed, and improvement in quality of products without material increase in cost of production is essential so that annual returns may increase accordingly. The interests of the bureau are sufficiently broad in scope to include any phase of plant studies which promises beneficial results but the primary object of all its activities is improved efficiency of production. The problems of production are investigated to determine economic gains from improvements in quality or type of product, to stabilize annual yields through control of losses caused by disease, and to develop better methods for storage and distribution of products to insure steady consumption and reduce the frequency of destructive gluts in the market.

"Accordingly the bureau is engaged in crop improvement by breeding and selection; in the introduction of new crop industries by means of seeds and plants procured from foreign countries; in experimentation in methods of culture and rotation systems adapted to irrigation, dry-land farming, and other systems of agriculture; in investigations in handling, storing, shipping, processing, or otherwise utilizing plants or plant products; and in the study, diagnosis and control of many kinds of plant diseases."

Growers of many crops now produce more efficiently as the result of the bureau's work in breeding and selecting superior varieties. Some of the most recent of these are Blakemore strawberry, a superior new market and preserving

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variety which appears to be especially adapted to the producing conditions of the south Atlantic states; three superior strains of Washington Navel orange and a cold enduring strain of Satsuma orange; more than 20 peach crosses which are promising for use in the fresh state and a dozen others especially desirable for canning; a strain of Jersey Wakefield cabbage which is resistant to the yellows disease; and strains of lettuce, even more disease resistant and commercially desirable than the bureau's earlier lettuce selections which have already largely superseded the older varieties in the commercial lettuce growing areas of the Southwest.

Selections of corn developed in cooperation with certain of the State Experiment Stations have proved valuable, and the bureau has devoted particular attention to several strains which show differences in their reaction to low temperatures both in spring and autumn. Beaver milo is gaining popularity because of its dwarf, erect character which makes possible its harvesting by the combine or the grain header. Two strains of oats, Victoria and Avena Victoria, introduced from Argentina have proved extremely resistant to all physiologic forms of crown rust to which they have been subjected. Abaca, often called Manila hemp, has been grown successfully in the Panama Canal Zone. Two sugar canes, one an introduction from Java and the other a seedling, seem much superior even to the previously introduced P.O.J. varieties which recently revived the languishing sugar industry of Louisiana. Each of these has yielded from 500 to 1500 pounds of sugar per acre more than the leading varieties grown in that state.

The bureau is engaged in studying many plant diseases to determine methods of preventing losses of this character. Complete eradication of the disease is favored when such action is possible and economically practicable. Campaigns for eradication of some diseases are under way in cooperation with States interested. Outstanding examples are: eradication of the disease of citrus trees known as citrus canker, from the Gulf States citrus region, which now nears completion; a somewhat similar campaign against the disease of peach trees known as the phoney disease in the Southern States, which has been in operation for a little more than a single season, with encouraging results; and the eradication of the common barberry bushes in the Northern States, especially where spring wheat is grown, in order to prevent the destructive epidemics of black stem rust of wheat.

When complete eradication of a disease is not practicable, methods of spraying, modification of cultural practices, or the development of varieties resistant to disease are investigated. In the case of the destructive blister rust disease of the five leaved pines of the north and west this is being accomplished by eradicating the currant and gooseberry bushes which constitute the intermediate hosts through which the disease spreads from pine to pine.

Material progress has been made during the past year for the control of fruit, vegetable, and cereal diseases. Take-all disease of wheat has proved serious in some districts, and scientists are attacking it from the angle of fertilizers which seems to offer a measure of control. Bacterial wilt of

alfalfa is another disease how receiving special attention and experiments with strains resistant to the disease are being investigated from several angles including the exploration of the alfalfa growing regions of eastern Europe and western Asia in search of resistant strains.

The bureau has devoted attention to many phases of utilization of plant products, as for example the determination of varieties most suitable for canning, drying and freezing, studies of injuries in transit, and determination of the best stages for harvesting perishable crops. It discourages increased plantings of such specialty crops as sunflower, mint, and wormseed, if the market is already well supplied. On the other hand the bureau points out that there is demand for certain drying oils used in paints and is experimenting in the production of safflower and hemp to supply this demand.

Farmers benefit by practical cultural advice. For example, the bureau determined that under certain conditions it is possible and even advantageous to cut potato seed somewhat in advance of the planting season, when field work is not so pressing. The bureau is recommending an improved practice in planting the sorghums to insure that the seed is covered with moist and mellow soil. In California it has discovered a commercially practicable method of pollinizing dates through which the ripening time may measurably be controlled and the risk of injury to the unharvested fruit by rain thereby reduced.

Not all of the results of the work of the scientific staff of the bureau are found in official publications. Many of them appear in scientific publications and trade journals and elsewhere. A list of such is therefore included in the report and suggest the wide range of activities of the specialists in the twenty research and service groups of workers of the bureau.
